REMARKS

The Official Action mailed March 14, 2011, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for Three Month Extension of Time*, which extends the shortened statutory period for response to September 14, 2011. Also, filed concurrently herewith is a *Request for Continued Examination*. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on June 5, 2006; September 18, 2006; September 11, 2008 and January 28, 2009.

A further Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 25-34 were pending in the present application prior to the above amendment. Claims 25-34 have been canceled without prejudice or disclaimer and new claims 35-41 have been added to recite additional protection to which the Applicant is entitled. Accordingly, claims 35-41 are now pending in the present application, of which claims 35 and 41 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 4 of the Official Action provisionally rejects claims 25, 31, 33, and 34 under the doctrine of obviousness-type double patenting over U.S. Application Serial No. 12/419,559 to Majima. The Applicant respectfully submits that the amended independent claims of the subject application are patentably distinct from the claims of the '559 application.

In particular, the amended claims are directed to a transmission device and method. The claims in the co-pending '559 application are being revised to be directed to a reception device and method. Therefore, Applicant believes the obviousness-type double patenting rejection of claims 25, 31, 33 and 34 cannot be maintained.

In any event, the Applicant respectfully requests that the provisional double patenting rejections be held in abeyance until an indication of allowable subject matter is made in the present application. At that time, Applicant will respond to any remaining double patenting rejections.

Accordingly, reconsideration and withdrawal of the obviousness-type double patenting rejection are in order and respectfully requested.

Paragraph 6 of the Official Action rejects claims 25-31, 33 and 34 as obvious based on the combination of U.S. Patent No. 6,311,306 to White, U.S. Patent No. 5,828,672 to Labonte and U.S. Patent No. 5,473,612 to Dehner. Paragraph 7 of the Official Action rejects claim 32 as obvious based on the combination of White, Labonte, Dehner and U.S. Patent No. 4,277,778 to Persson. The Applicant respectfully traverses the rejections because a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2144.04, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The rejected claims have been canceled without prejudice or disclaimer in favor of new claims 35-41, which include new independent claims 35 and 41. With respect to independent claims 35 and 41, the prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Specifically, independent claims 35 and 41 rephrase the inventive subject matter and now recite, among other features, (1) "a redundant bit of a predetermined value;" and (2) "a redundant bit is a bit which is common to, of four symbols obtained by a Gray code, the two symbols having a largest Euclidean distance."

When symbols are obtained by Gray code, only one of the bits of adjacent symbols is surely displaced. Thus, one of the two bits of data of the outermost symbols having the largest Euclidean distance becomes the value in which one of the two bits is displaced by one bit. Therefore, when the two bit data of the outermost symbols having the largest Euclidean distance are compared, the data includes a bit of a different value and a bit of a common value. That is, the bit of the common value has the same value. For example, comparing -3(1,1) and +3(0,1), "1" is the bit of the common value. Since the bit of the same value common to the outermost symbols having the largest Euclidean distance is added as the redundant bit, the first data being protected is arranged to either one of the two symbols having the largest Euclidean distance by the value of the first bit data.

The invention as recited in new independent claims 35 and 41 is directed to the transmission device and method wherein the data to be protected is protected even if a redundant bit of the same value is added. Further, the invention is characterized in that the data being protected is surely arranged to the two points (-3, +3) having the largest Euclidean distance so as to improve the signal-to-noise ratio on the data reception side.

More specifically, in the claimed transmission device and method of independent claims 35 and 41, respectively, data being protected (first data) is divided by a single bit, and the redundant bit of the same value is added to the divided data. On the other hand, the data being unprotected (second data) is divided by two bits. Since the

redundant bit is the bit common to the symbols having the largest Euclidean distance, the data being protected is surely arranged to either one of the two points (-3, +3) of the symbols having the largest Euclidean distance. On the other hand, the data being unprotected is arranged to the symbol determined by the two bits. The symbols generated by the above procedure are then modulated by 4-value FSK and transmitted to the reception side.

With such a transmission device and method, when the signal is transmitted from the transmission side according to the above procedure, the data being protected is surely arranged to either one of the two points (-3, +3) of the symbols having the largest Euclidean distance, whereby the signal-to-noise ratio of these points is improved as compared with other two points (-1, +1). Further, any complicated decoding is not necessary to the data being protected, since it is only necessary to delete the redundant bit.

The applied references fail to teach or suggest these features, in combination with other claimed features. For example, Labonte (column 5, lines 54-56) merely discloses that "77 Class 1 bits (and 7 CRC bits) are protected with a one-to-two (1/2) coder (i.e., one redundancy bit is added for each voice bit)." Here, the one-to-two coder is the means for protecting data by doubling a data amount (i.e., representing one bit by two bits), and such error control of adding redundancy on a transmission side is generally called FEC (Forward Error Correction). More specifically, the data amount is doubled by block coding, convolution coding or the like in the FEC.

Further, Labonte (column 4, line 12) discloses that "the decoder 7 in a process in which error correction is performed." That is, is appears that the decoder performs the error correction. Moreover, Labonte discloses a kind of FEC (column 5, lines 46-57) with reference to FIG. 3. In this, the class one bit is divided into 12 bits for which CRC (Cyclic Redundancy Check) is performed and 65 bits for which CRC is not performed, and it is understood that CRC corresponds to 7 bits. Here, 12 + 65 (= 77 audio bits) + 7 = 84 bits, and these bits become 168 bits if they are doubled by a double encoder. As

such, it appears impossible to obtain 178 bits as shown in Fig. 3. Fig. 4 shows a tail (5) arranged between the decoder 43 and the encoder 45, whereby $168 + 5 \times 2 = 178$ bits are obtained. Since the tail bit is the termination bit for improving correction capability when convolution encoding data is subjected to Viterbi decoding, one would have understood that the operation in Labonte is performed by the convolution encoding method.

However, it has been well known to persons skilled in error correction techniques that a code subjected to convolution encoding results in a form quite different from that of the original code, whereby it would have been apparent to one skilled in the art that such is clearly different from a technique of adding a fixed bit (of a predetermined value as a redundant bit) to an original code, as now recited in the independent claims. Moreover, one skilled in the art would not have recognized that data could be protected if a same bit value was added to all the data. Thus, the claimed subject matter differs from that taught in Labonte. White and Dehner fail to overcome the deficiencies of Labonte.

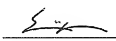
Because White, Labonte and Dehner do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be made with respect to independent claims 35 and 41. The secondary reference to Persson does not cure the deficiencies of White, Labonte and Dehner.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized to charge fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(a), 1.20(b), 1.20(c), and 1.20(d) (except the Issue Fee) which may be required now or hereafter, or credit any overpayment to Deposit Account No. 50-2280.

Respectfully submitted,



Eric J. Robinson
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.
3975 Fair Ridge Drive,
Suite 20 North
Fairfax, Virginia 22033
(571) 434-6789